



THE CARBON SEQUESTRATION NEWSLETTER

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Sequestration in the News

Indonesian CO₂ Capture, Recycling, and Injection. Two Japanese firms plan to build a plant in Indonesia to separate and capture CO₂ from power plant facilities. Nissho Iwai Corporation and Mitsubishi Heavy Industries will conduct a feasibility study in September and hope to have the plant operational by 2006. They plan to recover 30,000 tons CO₂/day, which will be sold to oil field operators for CO₂ injection projects in the region. The total cost of the plant is estimated at \$836 million. Reuters, "[Nissho, Mitsubishi Heavy in Indonesian CO₂ Project](#)," July 1, 2002.

Carbon Sequestration and Coal. *The Economist* featured several articles on carbon sequestration, climate change, and fossil energy. The articles mentioned clean coal technology, value-added geologic storage, capture technologies, terrestrial and ocean sequestration. IGCC technology, Dakota Gasification Company, saline aquifers, Statoil, and the CO₂ Capture Project were also mentioned in the text. *The Economist*, "Fired up with ideas; Carbon sequestration," July 6, 2002.

Carbon Dynamics in a Boreal Forest. Simulations of different harvesting intensities and rotation lengths on carbon and nitrogen dynamics of boreal forests in central Canada suggest that intensive harvesting regimes would decrease total ecosystem carbon compared with conventional harvesting. Longer rotations (120 years) and less intensive harvesting could increase carbon sequestration about 36–40%. *Ecological Modeling*, "Effects of harvesting regimes on carbon and nitrogen dynamics of boreal forests in central Canada: a process model simulation," October 1, 2002,

Ocean Carbon Cycling. An article in *Scientific American* focuses on the science and potential storage of carbon in the oceans. According to the article, the 1997 launch of the NASA Sea Wide Field Sensor (SeaWiFS), improved mathematical estimates of ocean phytoplankton productivity. Phytoplankton incorporate approximately 45 to 50 billion metric tons of inorganic carbon into their cells each year. This is twice previous estimates. Oceanographic research has also revealed phytoplankton sensitivity to changes in global temperatures and nutrient availability. *Scientific American*; "[The ocean's invisible forest](#)," August 2002.

Agricultural Carbon Sequestration. A nine-university Consortium for Agricultural Soil Mitigation of Greenhouse Gases (CASMGs) is conducting a \$15 million research program to determine the potential for sequestering carbon in agricultural soils and look at ways to reduce NO_x and CH₄. The program will also develop a web-based system to facilitate the sale of carbon credits between farmers and industry. CASMGs is administered by Kansas State University. DOE Battelle Pacific Northwest National Laboratory and USDA are also involved in the research project. U.S. Department of State, "[Researchers Say New Farm Practices Will Help Fight Climate Change](#)," July 2, 2002.

CO₂-Absorbing Eco-Cement. A small company in New Zealand has developed cement based on magnesium carbonate rather than calcium carbonate, which requires less energy to produce than conventional concrete. The cement absorbs roughly 0.4 tons CO₂ per ton of cement as it hardens. *TecEco, Pty. Ltd.*, July 10, 2002.

This newsletter is produced by the National Energy Technology Laboratory and presents summaries of significant events related to carbon sequestration that have taken place over the past month.

CO₂ Capture Project Receives Additional Funding.

The CO₂ Capture Project (CCP), a consortium of eight energy companies led by BP, received an additional \$1.8 million from the European Union Research Directorate. The new two-year Grangemouth Advanced Capture (GRACE) project began January 2002 and will cost a total of \$2.8 million. Areas of research will include the development of chemical looping combustion technology and new materials for hydrogen membrane reactors. The consortium was formed in 2000 to reduce the cost of CO₂ geologic storage technologies and is being funded in part by NETL. [“CO₂ Capture Project Receives a Further 2.1 Million Euros \(US\\$1.8 million\) From European Commission,”](#) March 2002.

Geologic Sequestration in France. A French state-owned geological and mining agency and an independent fossil energy research centre signed an agreement to study geologic sequestration, geologic analysis of regional sedimentary basins, and environmental pollution technology. For more information email Daniele Roblin, BRGM: d.roblin@brgm.fr. *The Mining Journal*, “French geological research alliance,” July 19, 2002.

Trading

Largest Ever Forward-Trade of GHG Emissions.

CO₂e.com facilitated a trade of 6 million tons of CO_{2eq} reductions between Blue Source, a U.S.-based GHG market company, and Ontario Power Generation. The two companies also completed a smaller option transaction for 3 million tCO_{2eq}. [“CO₂e.com Completes Largest Ever Publicly Announced Forward-Trade of Greenhouse Gas Emission Reductions,”](#) July 2, 2002.

U.S. – Australian Carbon Cooperation. The U.S. and Australia announced plans to develop a bilateral agreement, which includes joint projects in renewable energy and climate change monitoring. U.S. Global Change Research Information Office, [“Australia and the US Working Together on Climate Change,”](#) July 9, 2002.

Japan – Kazakhstan CO₂ Pact. In a recent agreement Japan will help Kazakhstan modernize its power facilities and reduce greenhouse gas emissions from power plants. In return, Japan will receive 60,000 tons of CO₂ emission rights per year from Kazakhstan between 2008 and 2012. It has not been determined whether this agreement will involve using joint implementation or clean development mechanisms. [“Japan, Kazakhstan in CO₂ Pact,”](#) July 9, 2002.

Policy

GHG Registry Recommendations Sent to White House.

The Secretaries of Energy, Commerce and Agriculture, and the EPA Administrator delivered a set of ten recommendations to the [President to improve the voluntary greenhouse gas registry](#). The recommendations include providing transferable credits for carbon mitigation and emissions reduction. According to the letter, incentives and recognition given for actions to remove CO₂ from the atmosphere will facilitate meeting the President's 2012 goal of an 18% reduction in carbon intensity. DOE, July 2, 2002.

States Send Letter to President Bush. Attorneys general of 11 states urged the President to push for federal measures to limit emissions of greenhouse gases. A Federal 'regulatory void,' the letter says, has left states to piece together a patchwork of inconsistent regulations. *New York Times*, [“State Officials Ask Bush To Act on Global Warming,”](#) July 17, 2002.

Australia Formally Rejects Kyoto Protocol. The Australian Federal Cabinet reaffirmed its decision not to ratify the Kyoto Protocol. Sources say the Government remains opposed to a carbon tax. *Australian Financial Review* “Cabinet Formally Rejects Kyoto Protocol,” July 24, 2002.

Events and Announcements

NETL's Second National Conference on Carbon Sequestration will be held May 2003. More details will be provided in next month's newsletter. [The First National Conference was held May 2001 in Washington DC](#), and was attended by over 400 national and international experts from government, academia and industry.

Nineteenth Annual International Pittsburgh Coal Conference. The University of Pittsburgh, along with the Conference Advisory Board and participating organizations, announces the [Nineteenth Annual International Pittsburgh Coal Conference](#), which will be held in Pittsburgh, PA, at the Radisson Hotel Green Tree, from September 23-27, 2002. Topics will include gasification and greenhouse gas control and CO₂ sequestration.

The Geological Society of America 2002 Annual Meeting. A special topic session entitled “Experimental, Field, and Modeling Studies of Geological Carbon Sequestration,” will be held at [The Geological Society of America 2002 Annual Meeting & Exposition October 27–30, Denver, Colorado](#). The session intends to bring Earth scientists together from the experimental, field, and modeling perspectives.

Events and Announcements

Future Energy Systems and Technology for CO₂ Abatement. Organized by The Technological Institute, this symposium will take a multidisciplinary approach to the abatement of carbon dioxide emissions from industry, transport and other areas. This will include the potential impact of chemistry, catalysis and process engineering in addition to carbon dioxide capture and sequestration and the overall effect of greenhouse gases on the environment. [Symposium to be held in Antwerpen, Belgium from November 17-20, 2002.](#)

USDA Symposium. [The USDA Symposium on Natural Resource Management to Offset Greenhouse Gas Emissions will be held November 19-21, 2002 in Raleigh, NC.](#) Researchers will present management options for increased carbon storage, innovative technologies and methodologies for monitoring and measuring terrestrial carbon stocks, and economic projections. A panel will discuss policy implications of scientific carbon research findings.

NETL at the February AAAS Meetings. [The American Association for the Advancement of Science annual meeting is February 13-18, 2003 in Denver, CO.](#) NETL has organized two symposia on Carbon Sequestration which will be included in the Dealing with Global Change track on Monday, February 17, 2003. The NETL-organized sessions are titled, "Comparative Assessment: Carbon Sequestration as a Greenhouse Gas Mitigation Strategy" and "Climate Change Mitigation Strategy: Technical Challenges for Carbon Sequestration." For more information, please contact Sarah Forbes at NETL.

Recent Publications

Federal Agency Global Change Data Sets Available. [An on-line, searchable Federal agency research data-set for 2001 is now available to researchers, industry and private businesses, policy makers, and the public.](#) This publication is the fifth in a series of annual reports of Federal agency data related to the U.S. Global Change Research Program. USGCRP, July 2002.

NAFTA Carbon Emissions Mitigation Report. In a report on the environmental impacts of an integrated North American electricity market, the Commission for Environmental Cooperation (CEC) recommends the development of a carbon trading regime and implementation of compatible carbon reduction strategies for Canada, Mexico, and the U.S. The suggested strategies include GHG emissions inventories; a North American trading regime; and an aggressive long-term renewable energy program in the U.S. CEC, [Environmental Challenges and Opportunities of the Evolving North American Electricity Market](#), June 2002.

Pew Center Energy Policy. The Pew Center on Global Climate Change released a report which considers energy policies that position the US to reduce GHG emissions. The report supports research and development in carbon capture and sequestration technologies. Pew Center on Global Climate Change, [Designing a Climate-Friendly Energy Policy: Options for the Near Term](#), July 2002.

Point Carbon 2002 Quarterly Report. Important market developments affecting the value of carbon over the last three months: The Netherlands and Norway both decided to launch national GHG emissions trading systems in 2005. The European Union and Japan ratified the Kyoto Protocol, while Australia rejected ratification. The present carbon value under the Kyoto framework (PCV Kyoto) has been adjusted downwards, because probability for entry into force of the Kyoto Protocol has been reduced. Point Carbon, [Quarterly Report](#), July 14, 2002.

ABA Climate Change Newsletter. The American Bar Association's Climate Change and Sustainable Development Committee newsletter covers topics such as the impact of U.S. climate change policy on U.S. energy, environmental and foreign policy initiatives, EPA's new Climate Leaders program, and The Northeastern states' Greenhouse Gas Early Action Demonstration Project. [ABA Climate Change and Sustainable Development Committee](#), July 2002.

CDM and Carbon Sequestration in Soils of Sub-Saharan Africa. A new publication documents the improvements in agricultural practices and land-use management in sub-Saharan Africa that could increase agricultural productivity and sequester soil carbon. *Climatic Change*, ["Soil Carbon Sequestration and the CDM: Opportunities and Challenges for Africa,"](#) September 2002.

UNEP Coal Sustainability Report. In a profile written for the UNEP by the World Coal Council, the sector's main long-term environmental challenge is identified to be greenhouse gas emissions from combustion. The proposed solution is to use clean coal technologies and to capture and sequester emitted CO₂. UNEP, The World Coal Institute, ["Industry as a Partner for Sustainable Development: Coal,"](#) July 8, 2002.

Recent Publications Continued

Standards for California GHG Reporting. [The California Climate Action Registry](#) has set standards for the voluntary reporting of greenhouse gas (GHG) emissions, establishing new procedures and a third party certification process. July 2002.

GAO Power Plant Study. Senators Jeffords and Lieberman requested a GAO study comparing emissions from old and new power plants. The study found that older plants release twice as much SO₂ and 25% more NO_x than new plants, while CO₂ emissions rates are comparable. 57% of fossil fuel generating plants were online before 1972. They account for 59% of SO_x emissions, 47% of NO_x, and 42% of CO₂ in 2001, while producing 42% of all electricity produced by fossil fuel plants. [GAO](#), July 2002,

Legislative Activity

Comprehensive Energy Policy Update. House-Senate energy conferees signed off on a list of 51 Tier II issues on energy efficiency, Indian energy and energy assistance programs. Conference meetings will produce a final conference report by Sept. 30. Remaining energy efficiency provisions; clean coal R&D; Alaska natural gas pipeline construction to the North Slope; non-CAFE vehicle provisions; and rural/remote community needs are nearing resolution. Controversial Tier I issues will be addressed in September. *Greenwire*, "Barton floats ban of 'round-trip' power deals during conference" July 26, 2002.

California GHG Bill Passed and Signed. The California Assembly passed a bill that will regulate GHG emissions from cars and trucks. The State Senate approved the bill in April, directing the California Air Resources Board to reduce tailpipes GHGs by the 2009 model year. The auto industry (except Honda), is strongly opposed, concerned that the legislation will be used as a template by other states. California is the first state to enact legislation reducing GHG emissions from passenger vehicles sold in the state. *Washington Post*, "[California Takes Lead on Auto Emissions](#)," July 22, 2002.

Hearing on the Administration's Climate Change Initiatives. [The House Committee on Science heard from three Administration Officials on climate change science and the National Climate Change Technology Initiative.](#) Bob Card, Undersecretary for Energy, Science and Environment of DOE, was among the three witnesses. July 10, 2002.

Hearing on International Environmental Treaties. [The Senate Environment and Public Works Committee and the Senate Foreign Relations Committee held a joint hearing to discuss U.S. involvement in international treaties.](#) Among the treaties discussed were The UNFCCC, the Kyoto Protocol, the UN Convention to Combat Desertification, and the Convention on Biological Diversity. Chairman Jeffords pushed for more specific environmental goals, using targets and timetables. Much of the hearing focused on the Kyoto Protocol and the upcoming World Summit on Sustainable Development in Johannesburg, South Africa. July 24, 2002.

Hearing on Global Climate Change and the U.S. Climate Action Report. Senator Kerry chaired a [hearing on the Administration's position on climate change](#). Witnesses included representatives from the Council on Environmental Quality, the Council of Economic Advisers, the Office of Science and Technology Policy, and the U.S. Department of Commerce. The witnesses supported the President's statements, saying the EPA's Climate Action Report is indeed a publication of the bureaucracy, but that it went through all appropriate channels and the information it presents is well established and based on the best models available today. Senate Committee on Science and Transportation, July 11, 2002.

President Bush's Clear Skies Legislation. H.R. 5266 would set emission reductions by 2010 of 4.5 million tons for SO₂, 2.1 million tons for NO_x and 26 million tons for mercury. By 2018, Clear Skies calls for a 3-million-ton SO₂ cap, 1.7-million-ton NO_x cap and 15-ton mercury cap. Included in H.R. 5266 is a call for the phaseout of several CAA programs, including the New Source Review permit program. *New York Times*, "[Bush Energy Proposal Seeks to 'Clear Skies' by 2018](#)," July 29, 2002.

If you'd like to join the e-mail distribution list, please send a message to majordomo@list-manager.netl.doe.gov with "subscribe sequestration" in the body of the message. We encourage you to pass this along to those whom you believe will be interested.

If you would like to know more about DOE's Carbon Sequestration R&D Program, please contact Scott Klara at NETL, klara@netl.doe.gov, or visit the website at www.netl.doe.gov/coalpower/sequestration/.